

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
7 September 2001 (07.09.2001)

PCT

(10) International Publication Number
WO 01/64024 A1

(51) International Patent Classification: **A01H 5/02**,
5/10, 13/00, C12N 1/20, 1/12, 5/04, 15/29, 15/32, 15/52,
15/31, 15/17, 15/13, 15/63, 15/74, 15/82

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(21) International Application Number: PCT/US01/06276

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(22) International Filing Date: 28 February 2001 (28.02.2001)

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM,
HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK,
LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,
MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,
TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

| | | |
|------------|-------------------------------|----|
| 60/185,660 | 29 February 2000 (29.02.2000) | US |
| 60/257,408 | 20 December 2000 (20.12.2000) | US |
| 60/259,248 | 29 December 2000 (29.12.2000) | US |
| 60/266,121 | 2 February 2001 (02.02.2001) | US |

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,
CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

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Published:

— with international search report

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MULTIPLE GENE EXPRESSION FOR ENGINEERING NOVEL PATHWAYS AND HYPEREXPRESSION OF FOREIGN PROTEINS IN PLANTS

(57) Abstract: Introducing blocks of foreign genes in a single operon would avoid complications such as position effect and gene silencing inherent in putting one gene at a time into random locations in the nuclear genome. Cloning several genes into a single T-DNA does not avoid the compounded variable expression problem encountered in nuclear transgenic plants. This disclosure shows that a bacterial operon can be expressed in a single integration event as opposed to multiple events requiring several years to accomplish. Expression of multiple genes via a single transformation event opens the possibility of expressing foreign pathways or pharmaceutical proteins involving multiple genes. Expressing the Cry2aA2 operon, including a putative chaperonin to aid in protein folding, in the chloroplast via a single transformation event leads to production of crystalized insecticidal proteins. Expressing the Mer operon via a single transformation event leads to a phytoremediation system.

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